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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,511	01/15/2004	Hans W. Bruesselbach	B-4759NP 621649-7	7055

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EXAMINER	
PEACE, RHONDA S	
ART UNIT	PAPER NUMBER
2874	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/759,511	BRUESSELBACH ET AL.	
	Examiner	Art Unit	
	Rhonda S. Peace	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *07 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 19-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17 and 19-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

In view of the appeal brief filed on 11/7/2006, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

Rodney Bovernick, SPE (~~AU 2874~~)

Claim Objections

Claims 1, 11, 20, and 27-29 are objected to because of the following informalities: claims 1, 11, 20, and 27-29 recite the limitation "said facet being formed by cleaving or cut and polishing." This limitation introduces ambiguity into the claims, as it is unclear whether the claim requires polishing. For example, the above limitation could imply that the facet is formed by either cleaving, or a combined cut and polishing

process. On the other hand, the limitation may alternatively imply the facet is formed by either of cleaving or cutting process, and then further the facet is polished. In review of the Applicant's specification, specifically page 7 lines 7-9, the Examiner is of the opinion the above claims are to describe a facet which is formed by either a combined cutting and polishing process, or a cleaving process, and examination of the above claims has proceeded according to this opinion. The Examiner recommends the above claims be amended in a manner similar to that below, such that the unclear nature of this limitation is remedied. Appropriate correction is required.

"... a facet, said facet being formed by cleaving, or combined cut and polishing, ..."

Claim 13 is objected to because of the following informalities: claim 13, directly dependent upon claim 11, recites the limitation "wherein the array is selected from a member of the group consisting of...." However, claim 11 does not recite an array, and therefore there is a lack of antecedent basis for the "said array" of claim 13. It is the Examiner's opinion that claim 13 is intended to be dependent upon claim 12, instead of claim 11, as claim 12 introduces the limitation "arranging the plurality of optical fibers in an array...." Examination has proceeded based upon this opinion. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-4, 6, 8-13, 17, 19-23, and 25-30 are rejected under 35 USC 102(b) as being anticipated by Wong (US 5408556).

Pertaining to claims 1 and 27, Wong discloses a fiber optic apparatus for coupling light comprising a plurality of single mode optical fibers **12-19** being fused together to form fused section **20** that is tapered along section **22** (Figures 1 and 5, col. 3 lines 40-65). The ends of the optical fibers **12-19** opposite the fused section **20** are detached from one another, as seen in Figure 1. Moreover, a cleaved facet is formed along the fused section **20** such that the facet is perpendicular to the fiber axis of the fused section **20**, as seen in Figure 5.

Concerning claims 9 and 28-30, Wong discloses the apparatus described above. Moreover, Wong discloses the fibers disposed in the fused section **20** are uniformly stretched to provide a desired amount of optical coupling between the fibers (col. 5 lines 3-23, Figure 8).

With regard to claims 6, 8, 20, and 25, Wong discloses the apparatus as described above. In addition, Wong discloses the facet is adapted to receive a single optical input and distribute this input to the plurality of optical fibers **12-19** (col. 5 lines 3-23, Figure 8). Moreover, this optical input has an input diameter at the facet which is larger than the diameter of the optical signal upon exiting the detached ends of optical fibers **12-19**; this may be determined as the diameter of the single mode fiber **11** supplying the input signal is approximately 10 microns, whereas the core diameter of the fibers at the detached end of each fiber is between 3 and 5 microns (col. 3 lines 49-58, and col. 4 lines 6-11, Figures 3 and 4). While the facet receives its optical input from fiber **11**, the facet is also *capable* of receiving light from free space. The Applicant is reminded that it has been held that the recitation that an element is "adapted to"

perform a function is not a positive limitation but only requires the ability to so perform; it does not constitute a limitation in any patentable sense (*In re Hutchison*, 69 USPQ 138).

Addressing claims 2-4, 10, 21-23, and 26, Wong discloses the apparatus described above. Moreover, as can be seen in Figures 2 and 3, the fibers **12-19** are arranged in a close-packed hexagonal array, and further are provided in a glass matrix **53** during the tapering process (col. 3 lines 49-54, and col. 5 lines 3-23). In addition, as the fused portion **20** is stretched to form a taper portion **22** (col. 3 lines 61-63), it is inherent that the core size of a given fiber within the taper portion is smaller than the core diameter of the same given fiber in the non-tapered (non-stretched) portion. Furthermore, Wong discloses that the optical fibers range in core sizes from 3-5 microns, thereby creating an apparatus where at least one fiber of the plurality of fibers has a different core size from at least one other optical fiber of the plurality of fibers (col. 3 lines 49-58).

Pertaining to claims 11-13, 17, and 19, the same reasoning applied in the rejection of apparatus claims 1-3, 4, 6, 8-10, 20-23, and 25-30, mutatis mutandis, applies to the subject matter of the method claims 11-13, 17, and 19, given the apparatus is considered inseparable from the method of making and using the apparatus.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 15 is rejected under 35 USC 103(a) as being unpatentable over Wong (US 5408556).

Pertaining to claim 15, Wong discloses the method as described above. However, Wong does not disclose illuminating the facet with a single optical output propagating in free space, and instead discloses the facet receiving a single optical input from an optical fiber. Nonetheless, being that the apparatus is capable of receiving an optical input, it would have been obvious to one of ordinary skill in the art to use any optical source in conjunction with the apparatus, including an optical signal propagating in free space.

Claims 7, 16, and 24 are rejected under 35 USC 103(a) as being unpatentable over Wong (US 5408556), in further view of Berkey (US 4915467).

Concerning claims 7, 16, and 24, Wong discloses the apparatus and method as described above. However, Wong does not disclose the glass matrix comprising fluorosilicate. Berkey discloses the use of a fluorosilicate matrix to enclose an optical fiber during a heating process (col. 10 lines 61-68, and col. 11 lines 1-2). It would have been obvious to one of ordinary skill in the art to combine the teachings of Wong and Berkey, as the use of fluorosilicate glass for the matrix creates an optical fiber coupler having a solid cross-section free of air lines or bubbles (col. 11 lines 1-2 of Berkey). Air bubbles or lines would disrupt optical coupling between the cores of the optical fibers in Wong, and therefore this method of Berkey is advantageous when used with the method of Wong, as it ensures high optical coupling between the cores of the fibers within the fused portion of the apparatus. Creating high optical coupling between the

cores of the fibers within the fused portion of Wong's apparatus is of great concern to Wong (col. 5 lines 5-29 of Wong).

Claims 5 and 14 are rejected under 35 USC 103(a) as being unpatentable over Wong (US 5408556), in further view of Russell et al (US 4932747).

With regard to claims 5 and 14, Wong discloses the device as described above. However, Wong does not disclose the apparatus is useable as a combiner, where an optical input may be provided to the plurality of unfused fibers and combined into a single output at the facet. Russell et al discloses a combiner having a very similar structure to that of Wong, where an optical input may be provided to the plurality of unfused fibers and combined into a single output at the facet (col. 7 lines 12-27 of Russell et al). It would have been obvious to use the splitter of Wong as a combiner, as is described by Russell et al, as doing so will increase the overall usability and functionality of the device, allowing the apparatus of Wong to bi-directionally function not only as a multiplexer, but also as a demultiplexer.

Response to Arguments

Applicant's arguments with respect to claims 1-17 and 19-30, presented in the appeal brief filed 11/7/2006, have been considered but are moot in view of the new ground(s) of rejection set forth above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rhonda S. Peace whose telephone number is (571) 272-8580. The examiner can normally be reached on M-F (8-5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272- 2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Rhonda S. Peace 1/22/07
Rhonda S. Peace
Examiner
Art Unit 2874

Michelle R. Connelly-Cushwa
MICHELLE CONNELLY-CUSHWA
PRIMARY EXAMINER
1/22/07